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LINKS: *Minority Research & Training*

NIA's Technical Assistance Workshop—Supporting the Future of Aging Research

Dr. J Taylor Harden with 2008 TAW Class

"I want you!" It may be the army's famous recruitment tagline, but it could just as easily be used by the National Institute on Aging (NIA). NIA is dedicated to building new generations of aging researchers, especially those interested in studying underrepresented populations.

As part of its efforts to foster the careers of new investigators, NIA hosts the Grants Technical Assistance Workshop, or TAW, preceding the Annual Scientific Meeting of the Gerontological Society of America and invites young researchers to participate.

"The workshop is specifically designed to meet the needs of pre- and post-doctoral students and recent recipients of Ph.D., M.D., or related doctoral degrees who seek careers in aging research," said J Taylor Harden, Ph.D., R.N., F.A.A.N. "NIA especially encourages minority or underrepresented scientists to apply."

Over the course of the 2-day interactive forum, participants learn from more seasoned investigators about the challenges and opportunities of a career in aging research. Fittingly, the 2008 keynote address was presented by Mary Ganguli, M.D., M.P.H., on "Taking the Next Step to a Successful Research Career." Ganguli spoke from her experience as not only the program director for the Division of Geriatrics and Neuropsychiatry in the Department of Psychiatry at University of Pittsburgh School of Medicine, but also as a Principal Investigator on several NIA-funded studies and member of NIA's National Advisory Council on Aging. The meeting also featured a "State of NIA" address presented by the Institute's (then) new deputy director, Marie A. Bernard, M.D., a recognized leader in the field of aging research. TAW participants noted that the information from Ganguli and Bernard will be particularly helpful as they move forward to build their scientific careers.

Along with opening their eyes to the breadth of research supported by NIA, participants received specific guidance on the NIA/NIH grant application process from the people who know it best, the NIA staff experts who review submissions. Participants also had a chance to present their plans for current or future research projects and get personalized feedback from peers and NIA staff. For many, this was the highlight of the workshop.

"The TAW gave me the tools to navigate the NIA/NIH grant writing websites which will save my mentor, department, and school's time. I can teach my fellow colleagues about grant writing and will recommend this workshop to them," said one TAW participant.

According to another, "I am now more aware of the overall process and motivated to try to obtain funding." This motivation is what the TAW is all about, supporting a future for aging research.

For instructions on how you can apply to the 2009 Technical Assistance Workshop, please see page 8.

IN THIS *Issue*

Diversity in the Biology of the Brain

Diagnosing dementia and other cognitive disorders among racially and ethnically diverse populations can be challenging. Many of the tests used for such diagnoses have intrinsic cultural and linguistic bias. Consequently, scientists have yet to characterize differences in the prevalence, incidence, and etiology (factors contributing to) of dementia among various racial and ethnic groups.

Photo credit: Jeff Miller, University of Wisconsin-Madison

Faced with the challenge of determining whether cognitive problems manifest differently on a biological level among racial groups, a team of researchers from the University of California at Davis and Berkley turned their attention to structural brain imaging using magnetic resonance imaging (MRI). As they explain, "Structural brain imaging is commonly used to study the biology of normal aging and cognitive impairment and may therefore serve to explore potential biological differences of cognitive impairment among racially and ethnically diverse individuals." Specifically, researchers studied how the relationship between brain structure and dementia are similar and different among African Americans, Hispanics, and Caucasians. Investigators used this information to validate the accuracy (and linguistic sensitivity) of their methods for clinically diagnosing cognitive impairment. Their findings, "Brain Behavior Relationships Among African Americans, Whites, and Hispanics," are published in the October-December 2008 issue of *Alzheimer Disease & Associated Disorders*.

The researchers first clinically diagnosed each participant as having normal cognition, mild cognitive impairment, or dementia using traditional methods that included physical and psychological exams. Following clinical diagnosis, investigators (who were not aware of subjects' age, sex, ethnicity, race, and diagnostic category) used MRI images to scan for any biological differences and similarities in the brains of the participants, looking for any patterns.

"What we learned is that we can bring in a very diverse group of individuals, African American, Hispanic, and White, ranging in education from none to 20 years, [clinically] diagnose them using uniform methods, and show that the relationship between the clinical diagnosis and brain variables are the same among all individuals," says lead author, Charles DeCarli, M.D. All participants with dementia had lost some brain volume and

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Roberta Diaz Brinton—A Shining STAR

Dr. Roberta Diaz Brinton

"Typically, diversity is defined in terms of ethnicity, gender, or economic features. But I see diversity from a different perspective. It is at the core of the scientific enterprise. The scientific challenges that face us as a society are too complex, too pressing to be solved by one way of knowing. It is diversity of perspective, analytic strategy, and insight that will lead to diversity of solutions. "
–Roberta Diaz Brinton, Ph.D.

This issue of *Links* profiles Roberta Diaz Brinton, Ph.D., an NIA-supported researcher. Brinton's compelling story starts with her childhood recovery from spinal meningitis and leads to her work today as Professor of Pharmacology and Pharmaceutical Sciences and Biomedical Engineering at the University of Southern California (USC) School of Pharmacy. At USC, Brinton explores the neurobiology of the aging female brain and its vulnerability to Alzheimer's disease. In addition to her research, Brinton serves as the Director of the USC STAR Science Education Program, an active collaboration with local schools to cultivate new generations of scientific explorers that is supported by the National Science Foundation. In the STAR Program, students join a research team to learn science by doing science in a way that is fun and that matters.

Links writer Megan Homer talked to Brinton about her scientific interests and her unique personal history. The following excerpts from their conversation illustrate how Brinton uses her passion for science to advance what we know about Alzheimer's disease and make a difference in the lives of disadvantaged youth.

Did you always plan on pursuing a career in biomedical research?

Mine was not a typical career path—it is nothing short of divine intervention that I am a scientist. My family was, by American standards, not wealthy. We had a substantial number of economic, social, and health challenges. Despite these difficulties, at the core of my family was an incredible commitment to the work ethic and a dogged determination to persevere. Both of these traits have served me tremendously well. The cost of college tuition was beyond our reach, so I worked, saved money, took college classes at night, and finally was able to attend college full time at 25. It was not until then that my journey to become a scientist started in earnest. From that point on, I was on the fast track. I graduated from college in 2.5 years and then went on to graduate school at the University of Arizona.

Dr. Roberta Diaz Brinton with 4 STAR students

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New Publications from the National Institute on Aging

The following are some of the newest publications from NIA. All of these resources are FREE and available in bulk quantities. They are easy to order by calling toll-free 800-222-2225 or visiting www.nia.nih.gov/HealthInformation.

Healthy Aging: Lessons from the Baltimore Longitudinal Study of Aging.

For 50 years, the NIA's Baltimore Longitudinal Study of Aging (BLSA) has been challenging stereotypes about aging and transforming what we know about getting older. This booklet offers a lively overview of the research and practical suggestions for healthy aging, based on BLSA and other NIA-supported research.

Exercise and Physical Activity: Your Everyday Guide from the National Institute on Aging.

This book for older adults provides tips for how to start exercising, including how to set goals, measure progress, and stick with it. Easy-to-follow directions for exercises and colorful photos help readers, including those with chronic conditions, exercise safely.

Talking with Your Older Patient: A Clinician's Handbook.

Designed for quick reference, this book introduces and/or reinforces communication skills that health professionals can use when working with older people. Topics range from discussing sensitive subjects to suggestions for encouraging wellness. If you are familiar with the older version of the handbook, expect to see a fresh design as well as new and revised content.

Older Adults and Alcohol: You Can Get Help.

This easy-to-read booklet provides readers the facts about alcohol and aging through engaging stories, bullets, questions/answers, and check-off lists.

Making Your Website Senior Friendly: Tips from the National Institute on Aging and the National Library of Medicine.

This tip sheet offers research-based guidelines that can help you create websites that work well for older adults.

LET US HEAR FROM YOU!

We are always interested in hearing from minority program faculty, alumni, and students. Please contact us and let us know where you are and what you are doing.

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American Recovery and Reinvestment Act

Under the American Recovery and Reinvestment Act (ARRA), the NIA received approximately $275 million in direct appropriations to obligate over 2 years. These stimulus funds will be used to intensify and expand scientific study and support the research infrastructure in aging and age-related cognitive change, including Alzheimer's disease, through a series of grants and initiatives. The funds also will be used for training opportunities for pre- and post-doctoral candidates, high school and college students, and science teachers. NIA has several mechanisms to distribute ARRA funds. For more information about ARRA, please visit NIA's website at www.nia.nih.gov/recovery/.

K01 Funding Announcement: Promoting Careers in Aging and Health Disparities Research

The NIA encourages applications for the K01 grant—Promoting Careers in Aging and Health Disparities Research. Eligible individuals are applicants who have been determined by the grantee institution to be committed to a career in health disparities research related to aging and who are members of or knowledgeable about health disparity population groups. Candidates must be U.S. citizens or non-citizen nationals, or individuals lawfully admitted for permanent residence, who hold a research or health-professional doctoral degree or its equivalent and can commit a minimum of 75% of full-time professional effort conducting research and relevant career development activities specified in the application. For more information about this K01 award, including additional eligibility criteria and how to apply, please visit: http://grants.nih.gov/grants/guide/pa-files/PAR-08-033.html.

Diversity in the Biology of the Brain (continued from page 2)

had an increase in white matter abnormalities. The abnormalities are an indication of a problem with connections between areas of the brain, associated with mild cognitive impairment and dementia.

"By looking at diverse people, we can see interesting and potentially informative biological influences that might tell us about disease pathophysiology," says DeCarli.

This study demonstrates the benefit of having a diverse participant pool. When research involves a homogeneous group, the findings may not apply to or benefit other populations. According to the investigators in this study, their findings are more likely to help a broader group of people because they are based on research with diverse participants. The investigators point out that recruiting underrepresented populations may not be easy—in fact, it is a continual challenge for investigators in all fields, not just aging. But the results of studies with diverse participants can be more meaningful and have a much greater impact.

NIA's Health Disparities Resource Persons Network

NIA's Minority Workgroup encourages investigators who have experience working with diverse populations and older adults to register to be an expert resource for the Health Disparities Resource Persons Network. The network helps connect early career scientists with investigators who have significant experience in aging research, minority health, health disparities, and minority recruitment and retention. If you are interested in joining or using the resources available on the network, please visit: www.nia.nih.gov/ResearchInformation/HDToolbox.

Dr. Roberta Diaz Brinton (continued from page 3)

How did you choose to study cellular mechanisms of learning and memory?

In my first years of graduate school I found my life's purpose in working to understand the mechanisms of learning and memory and, based on those insights, develop therapeutics to prevent Alzheimer's disease. I was studying the neuropsychological profiles of people with brain damage when I observed a pattern. Every person with brain damage, regardless of severity, exhibited significant memory dysfunction. I was fascinated by this – no other domain of brain function was so vulnerable. I decided to figure out why memory was so vulnerable.

Can you tell me a little bit about how you came to investigate estrogen action in the brain?

During my postdoctoral fellowship with Dr. Bruce McEwen, I was invited to observe Dr. Howard Fillit's 8-week clinical trial of estrogen therapy in women with Alzheimer's disease. Howard was interested in pursuing the clinical significance of Dr. Vicki Luine's finding that estrogen increased choline acetyltransferase activity. During this time, I was fortunate to have the opportunity to observe and interact with women who had profound Alzheimer's disease. The effects of estrogen in women with Alzheimer's disease ranged from subtle effects, experienced by many, to a rare but substantial effect in one woman. I was hooked. I had to know how this molecule worked in the brain. This began what has now been a 20-year journey of discovery.

Following your decision to study the cellular mechanisms of learning and memory, how did you get started in the particular area of research on bioenergetics and estrogen?

Women represent 68% of all people living with Alzheimer's disease. So if we are to stem the tide of the Alzheimer's epidemic, it makes sense to determine whether there are features unique to women that makes them inherently more vulnerable to developing the disease.

Our research began with investigating what estrogen does in the brain. This work kept leading us into the mitochondria. The brain is the most bioenergetically demanding organ in the body and is almost completely dependent on glucose for its fuel. Estrogen sustains the brain's ability to use glucose as its primary fuel source, thereby preventing the switch to less efficient fuel alternatives (such as ketone bodies) that is characteristic of Alzheimer's disease.

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Currently, we are focused on determining the earliest events of bioenergetic dysfunction as indicators of impending Alzheimer's disease. We hope to develop interventions to prevent the dysfunction and Alzheimer's disease, particularly in postmenopausal women. At the same time, we are developing estrogen alternatives that will activate estrogen action in the brain (and bone) while being inactive in breast and uterus.

You have been the Director of the USC Science Technology and Research (STAR) program for 20 years. Can you tell me about this work?

People rightly expect that science will help us to discover how the world works and, armed with that knowledge, create solutions to the world's problems.

The STAR program is a collaborative venture with an inner city urban ethnically and culturally diverse high school, Bravo Medical Magnet, which is adjacent to USC's health science campus. STAR students conduct research as part of their academic year curriculum and during summer months. They work 50 weeks a year conducting real science aimed at results that really matter. STAR students learn science by doing science. They are valued members of the research team. Most of the students continue to conduct research in college and frequently return to their research at USC during the summer. Their contributions are acknowledged in publications and, when appropriate, the students are included as co-authors.

As I became more familiar with the school system in LA, it became apparent that STAR students were even more remarkable than I realized. They had survived an educational system that discouraged interest in science and math. This led to development of a project to see if we could reach back into the educational system and increase the number of math and science "survivors." We provide mentoring to elementary school students in science, math and engineering with the expectation that they will eventually matriculate into the high school STAR program. The high school STAR students act as both teacher and role model for the young scientific explorers. Each year we have at least 25 Bravo Medical Magnet high school students in USC labs and another 25 preparing to enter our labs. Plus, we mentor approximately 300 elementary school students.

Dr. Roberta Diaz Brinton with Murchison elementary students

Creating a new generation of scientists and engineers is a long term, meaningful investment. My philosophy is to not lower standards but to give each student everything they need to succeed in science and math. So far this has been tremendously successful. The STAR Program is evidence that, even under the challenging conditions of urban America, young people can excel in science and math.

What take-away message would you give to students around the country who want to pursue science?

Scientists are real people, like you. The challenges society faces today requires diverse intellects from every sector of our citizenry. STAR students prove that disadvantaged does not mean unwilling or unable, it simply means undiscovered. So, regardless of your socioeconomic or ethnic background, if you want to change the world for the better, become a scientist.

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OFFICIAL BUSINESS
Penalty for private use, $300.

Remember: July 17th Deadline for Applications to Technical Assistance Workshop

On November 17-18, NIA will hold its 2-day interactive forum, the Technical Assistance Workshop for Minority and Emerging Scientists and Students. During the workshop, NIA staff and associated faculty members will present information and provide technical assistance on applying for NIA grants. Participants in the workshop, depending on career stage, will have an opportunity to make podium presentations of current or planned research projects and receive feedback from peers and NIA staff. The workshop will be held immediately before the 2009 Annual Scientific Meeting of Gerontological Society of America, in Atlanta, GA. Participation is by competitive application.

NIA encourages applications from members of groups underrepresented in aging research and investigators committed to research careers related to minority aging issues. Applicants should be pre- and post-doctoral students or recent recipients of Ph.D., M.D., or related doctoral degrees; new to the NIH application process and/or embarking on an independent program of research; investigators with less than 5 years of research experience; and U.S. citizens, non-citizen nationals or permanent residents.

Applications are due by July 17. For information and application forms, please contact Andrea Griffin-Mann at 301-496-0765; griffinmanna@mail.nih.gov.

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